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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/748,326	12/26/2000	Hiroyuki Muramatsu	S004-4175	9113

7590 03/19/2003

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EXAMINER
BUDD, MARK OSBORNE

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 03/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
748326	Muramatsu et al
Examiner	**Group Art Unit**
Budd	2834

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☒ Responsive to communication(s) filed on 9-9-02.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-18 is/are pending in the application.

Of the above claim(s) 18 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-13, 16 and 17 is/are rejected.

☒ Claim(s) 14 and 15 is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☒ Notice of Reference(s) Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other _____

Office Action Summary

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by Kami or Freeman. Kami (figs. 9-23) and Freeman (fig. 2) each show a piezoelectric element for transmitting or receiving ultrasound mounted on a plate (e.g. #11 of Kami) (#44 of Freeman); the second side of the base plate being engaged with the human body.

Claims 2, 3 and 11-13 are rejected under 35 U.S.C. 102(a) as being anticipated by Freeman.

As noted above, figure 2 of Freeman teaches both a transmitting and a separate receiving piezoelectric element on a plate which is engaged with the human body to detect pulse and/or blood pressure.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-9 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman in view of Kami or Shinogi.

Freeman teaches the basic pulse detection device but does not specify the thickness of layer #44 and does not show a slot between the transmitting and receiving piezo elements. However, using a 1/4 wave impedance matching layer (whose impedance is generally the geometric mean of the neighboring impedances) to increase efficiency and a slot or notch (or other change in impedance) between neighboring piezo elements to prevent cross talk are taught by Kami (#204- fig. 2, #11- figs. 3-9) and Shinogi (#35 fig. 9, #45 fig. 10). Thus to provide a 1/4 wave impedance match and an isolation notch in Kami for the explicit reasons noted above would have been obvious to one of ordinary skill in the art.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Freeman in view of Langley or Adachi.

Freeman teaches the basic pulse detection transducer but does not slant the piezo elements with regard to the transmission face. However Langley (figs. 2-4) and Adachi (figs. 10, 11, 14 and 27) teach the front and rear surfaces of the transducer are not parallel so that the wave path between transmitter and receiver is more direct and thereby provides a stronger output signal. Thus, for at least this reason it would have been obvious to one of ordinary skill in the art to amend the transmit and receive paths of Freeman so that the front and rear surfaces of the transducer are not parallel.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko in view of Freeman or vice versa.

Freeman teaches the pulse detection transducer but the front plate does not carry the electrode connections to the piezo element. Kaneko teaches providing essentially a PCB with electrodes and leads as either the front or back plate of a piezoelectric ultrasonic transducer. Kaneko does not mention the particular use as a pulse detector for his transducer. On the one hand, it would have been obvious to one of ordinary skill in the art to provide the layer #44 of Freeman as an electrode and lead connection plate as taught by Kaneko so as to enhance the lead connections and ease manufacture. On the other hand, it would have been obvious to one of ordinary skill in the art to apply Kaneko for any commonly known use for a piezo transducer, including that taught by Freeman (pulse detection in the human body).

Claims 14 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Budd/ek

03/17/03

MARK O. BUDD
PRIMARY EXAMINER
ART UNIT 213